

ABSTRACT OF THE DISCLOSURE

A method for fabricating a capacitor of a semiconductor device is disclosed, in which loss of and damage to a lower electrode is minimized to improve process yield. The method for fabricating a capacitor of a semiconductor device includes, for example, forming a conductive region on a semiconductor substrate; forming an interleaving insulating film having a contact hole on the conductive region; forming a contact plug within the contact hole; forming insulating film patterns on some region of the interleaving insulating film to expose the contact plug and the interleaving insulating film adjacent to the contact plug; depositing a barrier film and a first conductive layer on an entire surface including the contact plug and the insulating film patterns; forming a photoresist on an upper portion of the contact plug between the insulating film patterns; sequentially removing portions of the first conductive layer and the barrier film on the insulating film patterns using the photoresist as a mask to form a lower electrode and a barrier film in a U-shape in cross-section; removing the photoresist using an etching gas that is non-reactive with respect to the lower electrode; removing the insulating film patterns; and sequentially forming a dielectric film and an upper electrode on surfaces of the lower electrode and the barrier film.